Neon Weka

Secure LED Control Unit

User manual.

Introduction:

This document describes functioning of the Neon Weka Secure LED Control Unit.
This device is used to apply Low voltage lighting (LEDs) in a safe and secure manner,

Properties:

- Input terminals voltage: 7.5,. 24 V.
- 8 adjustable current protected outputs, rating 5 Amp each or 16 Amp totally per Control Unit.
- Adjustable over-heating protection.
- Adjustable minimal voltage protection.
- Logging of the 100 last events.
- Possibility to connect a number of more units to each other.
- RS232 cable read and programming facility.
- Dimmable through pararmeter settings between 10 and 100 %. External button or dummer unit.

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Settings:

Dipswitches:

The 4 dipswitches on the PCB have the following functions:

Dipswitch	Function:
1	ON: Output not switched ON at start-up
2	OFF: @error = only outputs off ON: @error = Master relay off
3	OFF: Unit is Master / ON: Unit is Slave.
4	ON: Automatic calibration.

Menu:

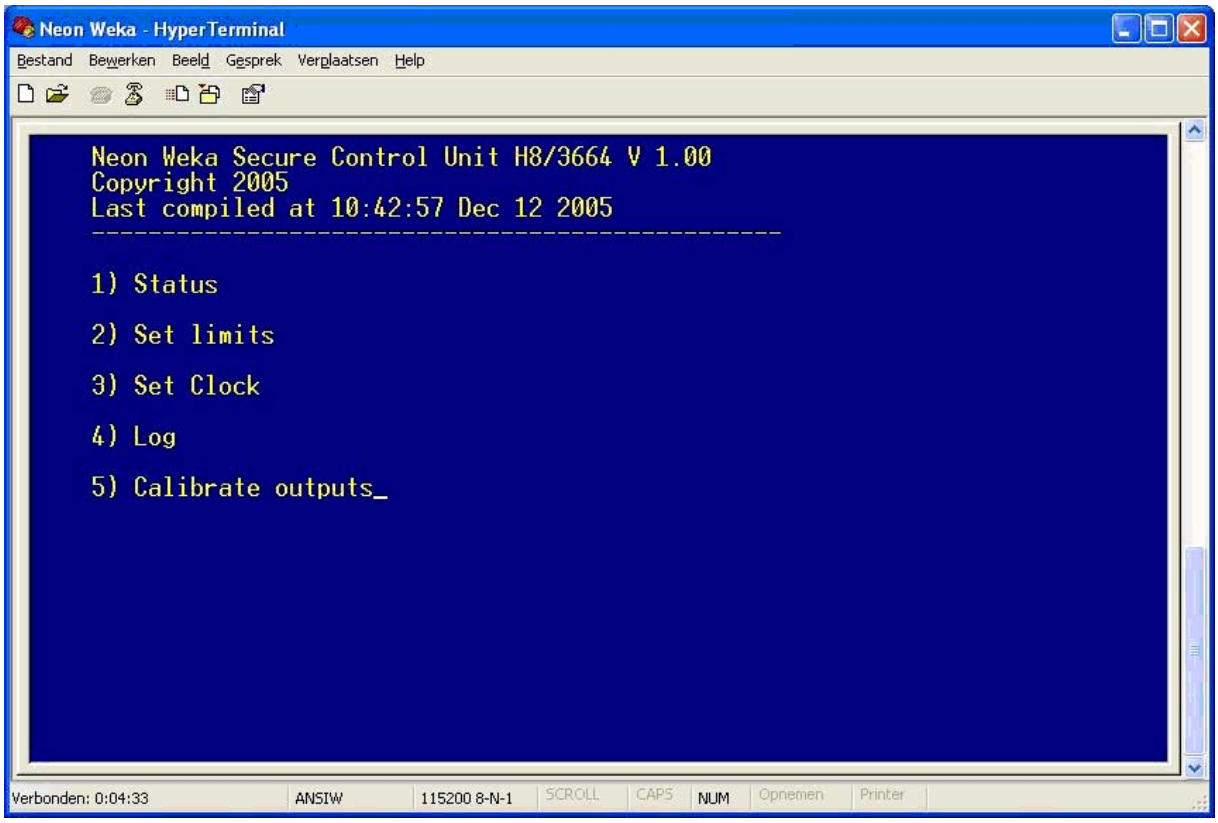
The Unit can be programmed/ adjusted through the 9 way RS232 connector on the PCB. Connect a straight (non-crossed) serial cable between the PCB and a PC. Use a terminal program, for example HyperTerminal (Windows), to adjust the program.
The settings for this program should be as follows:

Serial port settings:

- 115200.
- 8 data bits.
- No parity
- 1 stop bit.
- No hardware support. (3-core wire)

When the connection is made the following menu will be displayed on the PC, after pressing ‘ESC’ or the Spacebar. You can choose from the following options:

1) Status.
2) Set limits.
3) Set Clock.
4) Log.



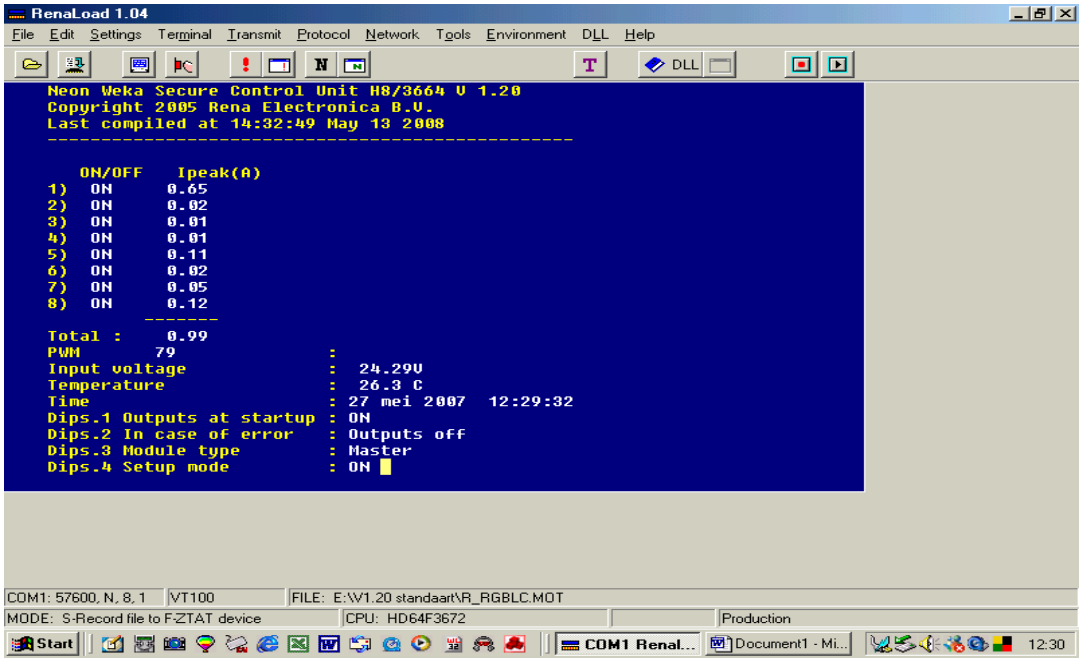
Numbers or characters for ') ' indicate which buttons are available for selection

Status menu:

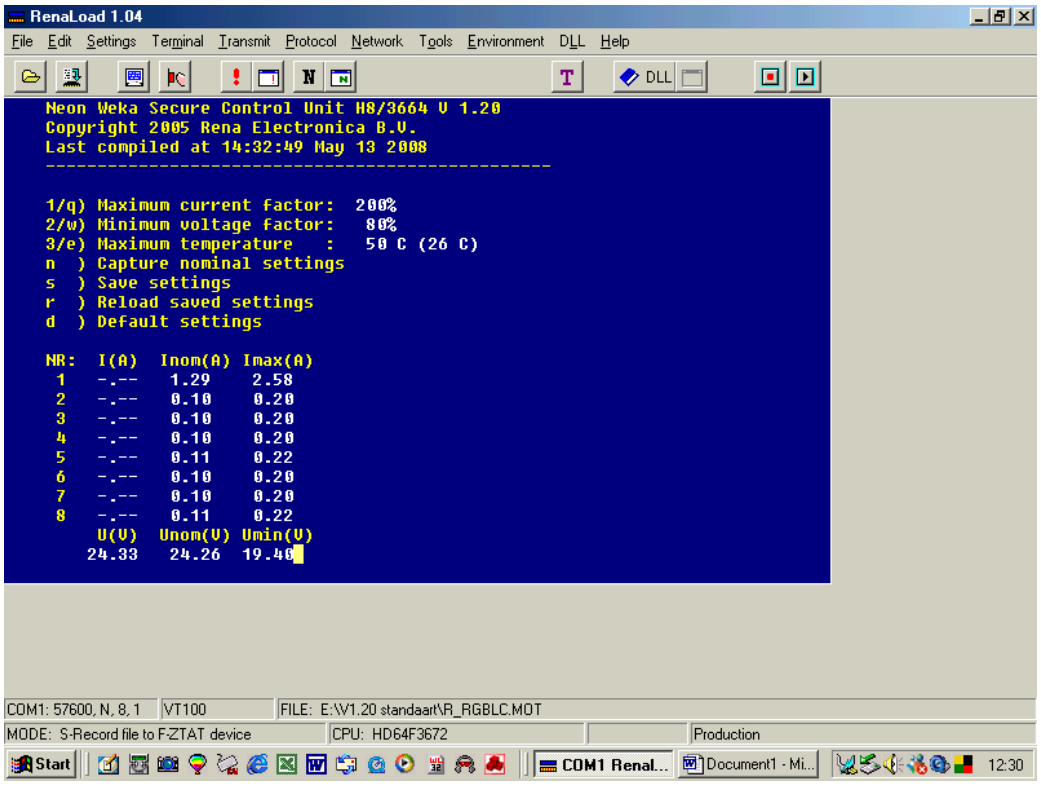
This menu gives an overview of all the current parameters (settings).
By selecting buttons **1 to 8** all individual outputs can be turned ON or OFF.

If an output does not switch to ‘ON’ or switches directly to ‘OFF ' an error has been detected (please see further information).

Displayed currents are measured currents. Currents below **1 Amp** will not be displayed due to the unreliable measuring in the lower bottom range.



Set limits menu:


RenaLoad 1.04
File Edit Settings Terminal Transmit Protocol Network Tools Environment DLL Help
Neon Weka Secure Control Unit H8/3664 V 1.20
Copyright 2005 Rena Electronica B.V.
Last compiled at 14:32:49 May 13 2008
1/q) Maximum current factor: 200%
2/w) Minimum voltage factor: 80%
3/e) Maximum temperature : 50 C (26 C)
n) Capture nominal settings
s) Save settings
r) Reload saved settings
d) Default settings
NR: I(A) Inom(A) Imax(A)
1 -.-- 1.29 2.58
2 -.-- 0.10 0.20
3 -.-- 0.10 0.20
4 -.-- 0.10 0.20
5 -.-- 0.11 0.22
6 -.-- 0.10 0.20
7 -.-- 0.10 0.20
8 -.-- 0.11 0.22
U(V) Unom(V) Umin(V)
24.33 24.26 19.40
COM1: 57600, N, 8, 1
VT100
FILE: E:\V1.20 standaart\R_RGBLC.MOT
MODE: S-Record file to F-ZTAT device
CPU: HD64F3672
Production
Start
COM1 Renal...
Document1 - Mi...
12:30

In this menu a protection mode limit can be set. Causes for going into protection mode can be:

- The current drawn is higher than the set mode:
  If the current on an output terminal becomes higher than the nominal current on that output multiplied with the set factor.
  The nominal current per output depends on it's load, the setting of the load is also determined in this menu. The adjustable (set) factor is a percentage that is equal for all the outputs.
  This factor is adjustable by 100-150% of the nominal measured values.
  When calibrating this factor is always 200 %. (fixed)

- Below voltage.
  This is the nominal input voltage multiplied with the set factor. These two parameters are set in the same way as the current parameters.
  The set factor can be set to 80-100% of the nominal measured values.

- Over temperature.
  This protection is adjustable between 50 and 70 degrees Celcius. When the temperature becomes higher than this value the unit goes into protected mode. If no sensor has been connected the unit goes into automatic mode. If the temperature drops 10° Celsius then the unit will retuurn to operation mode. (On condition that there still is voltage supply to the input!)
  To test the print without a sensor no special measures are necessary, "null" automatically becomes the test value.

Buttons:
- 1/q : Adjust current factor.
- 2/w : Adjust voltage factor.
- 3/e :Adjust maximum temperature
- n : Specify nominal values..
- s : Store/save modifications..
- r : Read /retrieve current settings
- d : Set default values

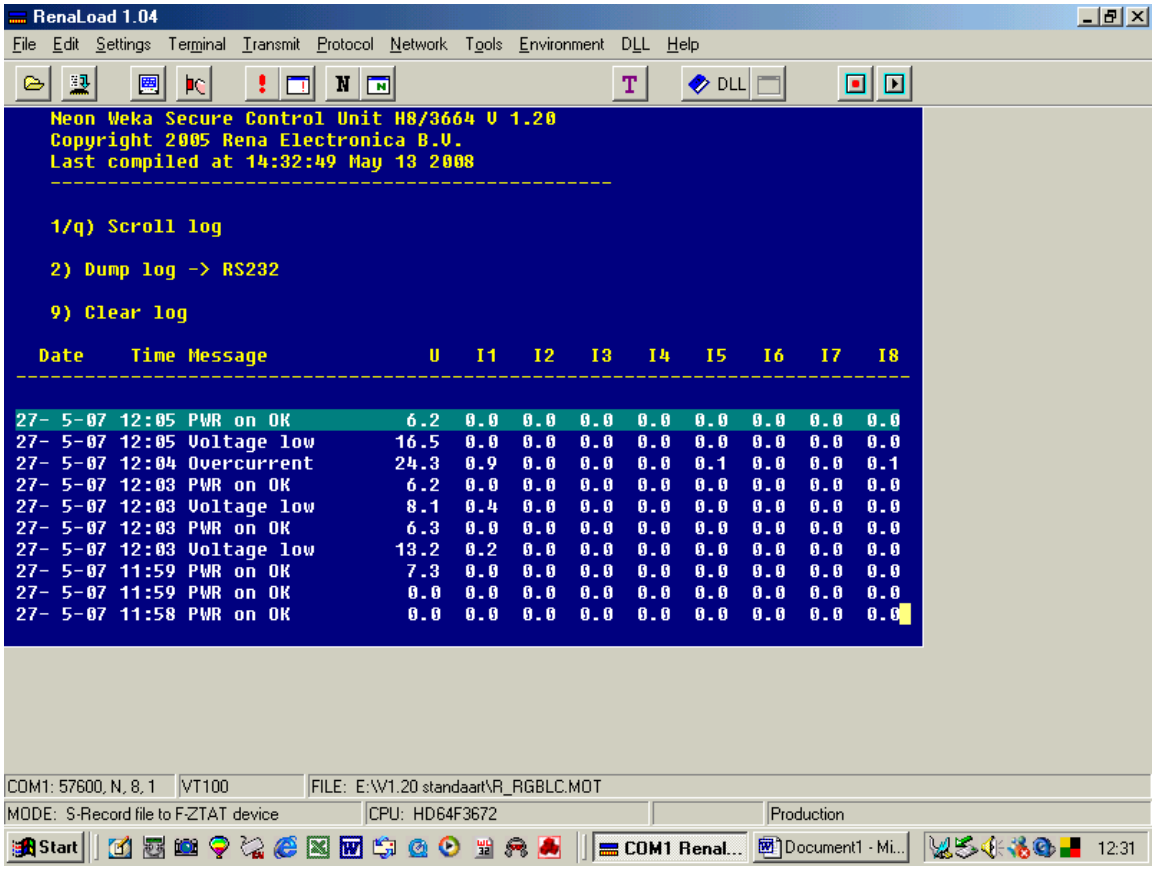
The bottom part of the screen shows the current per output as follows
- The current measured Current.
- The nominal Current. (Value set with button 'n')
- The maximum permissible current.

The same parameters will be shown in the input voltage screen.

Set clock menu:

Within this menu the clock can be adjusted.
- 1/q : Set Minutes.
- 2/w : Set Hours
- 3/e : Set Day
- 4/r : Set Month
- 5/t : Set Year.
- s : Save Clock settings.

Log menu:


RenaLoad 1.04
File Edit Settings Terminal Transmit Protocol Network Tools Environment DLL Help
Neon Weka Secure Control Unit H8/3664 V 1.20
Copyright 2005 Rena Electronica B.V.
Last compiled at 14:32:49 May 13 2008
1/q) Scroll log
2) Dump log -> RS232
9) Clear log
Date Time Message U I1 I2 I3 I4 I5 I6 I7 I8
27- 5-07 12:05 PWR on OK 6.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
27- 5-07 12:05 Voltage low 16.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
27- 5-07 12:04 Overcurrent 24.3 0.9 0.0 0.0 0.0 0.1 0.0 0.0 0.1
27- 5-07 12:03 PWR on OK 6.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
27- 5-07 12:03 Voltage low 8.1 0.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0
27- 5-07 12:03 PWR on OK 6.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
27- 5-07 12:03 Voltage low 13.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0
27- 5-07 11:59 PWR on OK 7.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
27- 5-07 11:59 PWR on OK 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
27- 5-07 11:58 PWR on OK 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
COM1: 57600, N, 8, 1
VT100
FILE: E:\V1.20 standaart\R_RGBLC.MOT
MODE: S-Record file to F-ZTAT device
CPU: HD64F3672
Production
Start
COM1 Renal...
Document1 - Mi...
12:31

In the log menu it is possible to browse trough the log file. The last 100 events will be logged.

The following events will be logged:

- Date
- Time.
- Reason for the log event.
- The supply voltage on the input terminal at the moment of the event.
- The current on the output terminals at the moment of the event.

When will be logged:

- Switching on of the power supply (startvalues of the voltages and currents)
- supply voltage too low (nominal * factor)
- Output currents too high. (Nominally * factor)
- Temperature too high. (>50 degrees)
- When Temperature protection mode is restored. (<35 degrees)
- At external error. (Input on unit closed to GND)
- At external error released. (Input on the print "open")

Buttons:

- 1/q: scroll through all events.
- 2: Dump the whole log file to the serial port.

Only if Dipswitch 4 is on:

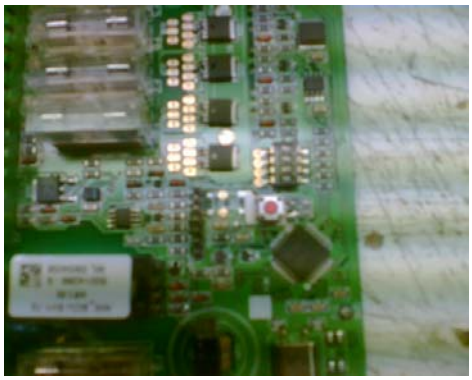
- 9: Erase Log file completely.(there is no backup if you have not saved it with for example copy /paste into Word or Scratch pad)

Automatic Calibrate outputs menu:

This calibration is possible with or wothout laptop connection..

When Dip 4 is switched on the module goes to calibration menu.

When jumper P1(test button option) is short-circuited (WATCH OUT: NOT the RESET which is close to it!!)(see layout), then the currents of the load at that moment will be measured and written in the table like in the table at "settings". (this can be done manually, by PC or laptop)



On P1 a button can be mounted for calibration (not standard)
Or a short-circuit wire can be used on the jumper or the flat point of a screwdriver may be used.

To check if a function is being performed can be seen in the change of rythm of the flashing led next to the battery.
Normally this control led flashes 1x per second. When P1will be closed briefly this led will flash fast 4x and then go back to it's former tempo.

When during calibration outputs will be switched off, the module will switch on the outputs one by one and after that switch them off again to determine the recorded current per output.
If the outputs are aslready switched on nothing will visibly change in the status.

WATCH OUT: during Automatic Calibration there may be NO short-ciruiting or break in the tension during this routine! The recorded values will not be the correct ones then and can only be changed from within the setting menu by laptop menu..

(once an output has been set "too low" during auto-calibration it can only be corrected manually by loading the Default settings and calibrating again).

When Dip 4 is put back now the module is automaticcally configurated.

Dimmer Function.

In the software version a dimmer function is alo progammed.

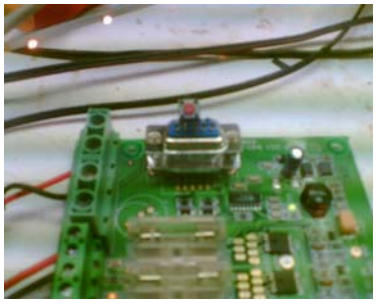
It is suitable for dimming with an external button or, after update, a separate external gradual dimmer.
Because of the combination of dimming and current measuring it is not possible to dim right to zero and a mimimal value of 10% is necessary to garantuee good current measurement.

Dimmen by button.

Dimming is possible when Dip 4 is switched off and a button is connected to pen 2and 3 of the RS232 plug or by using the extra dimmer extension.
It is available under number NW_A-RS232.

In the status menua PWM value is stated (the dimming value)and this can also be changed through PC or LAPTOP using keys + and - .

This value will be stored and will be used at every start. Of course the value can be changed with the internal and/or external dim function (as described hereafter).



By pushing and holding the button all the outputs will be dimmed at the same time.
When the dimmer button is pushed and held again the outputs will be turned to the maximal tension again.
If the current feed has been interrupted the last value will be kept.

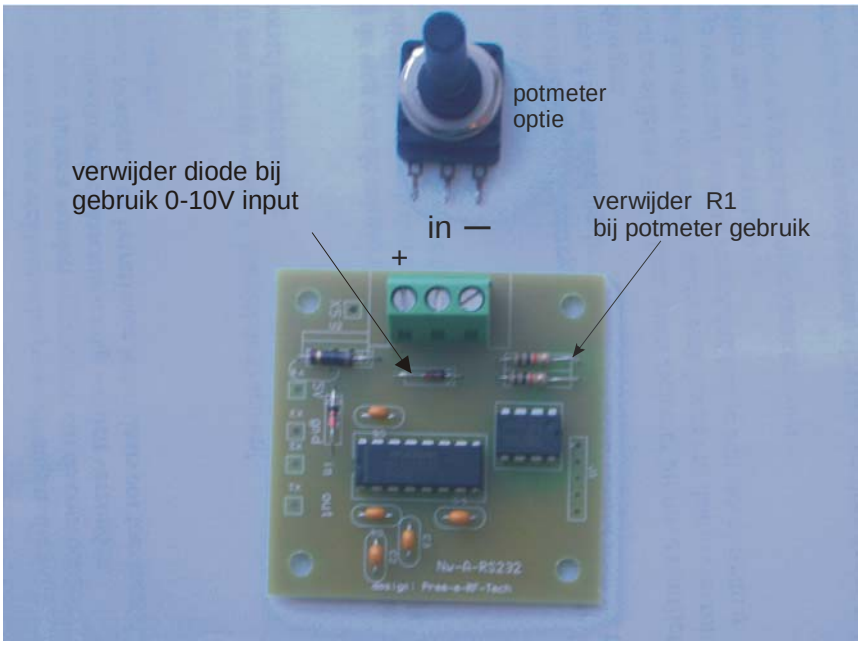
The preferred connection to this button is, using two cores's of an UTPcable pair(type cat 5 or cat 6) with a maximal length of 10 metres.
If a longer cable is required, there is the possibility of realising a separately normally open contact (use: NO and common) of an external energized relay.

All other already present functions of pre-installed software releases are unchanged..

Dimming by external gradual dimmer.

The external dimmer is an extra option that sends a percentual value between 0% and 100% through a datamessage.

The dimmer has basically been developed for a input tension of 0 to 10 volts, that should beconeected to the middle pin of screw connection 12.
The lower (mass) of the 0-10 volts tension will be to the left screw connection (when facing it).



Connecting of the dimmer.

Connected to the dimmer is a plug that should be put into the RS232 port of the NW_LCU. Lock the plug in place by means of pin screws.

An extra wire coming from the plug (red) is to be put onto **PIN2** of J10 of the conroller print by means of the 1-pole connection pin.
J10 is the row of pins with the script ”program” ; pin 2 is the second pin from the backup battery (also view the print setting of the connection data).

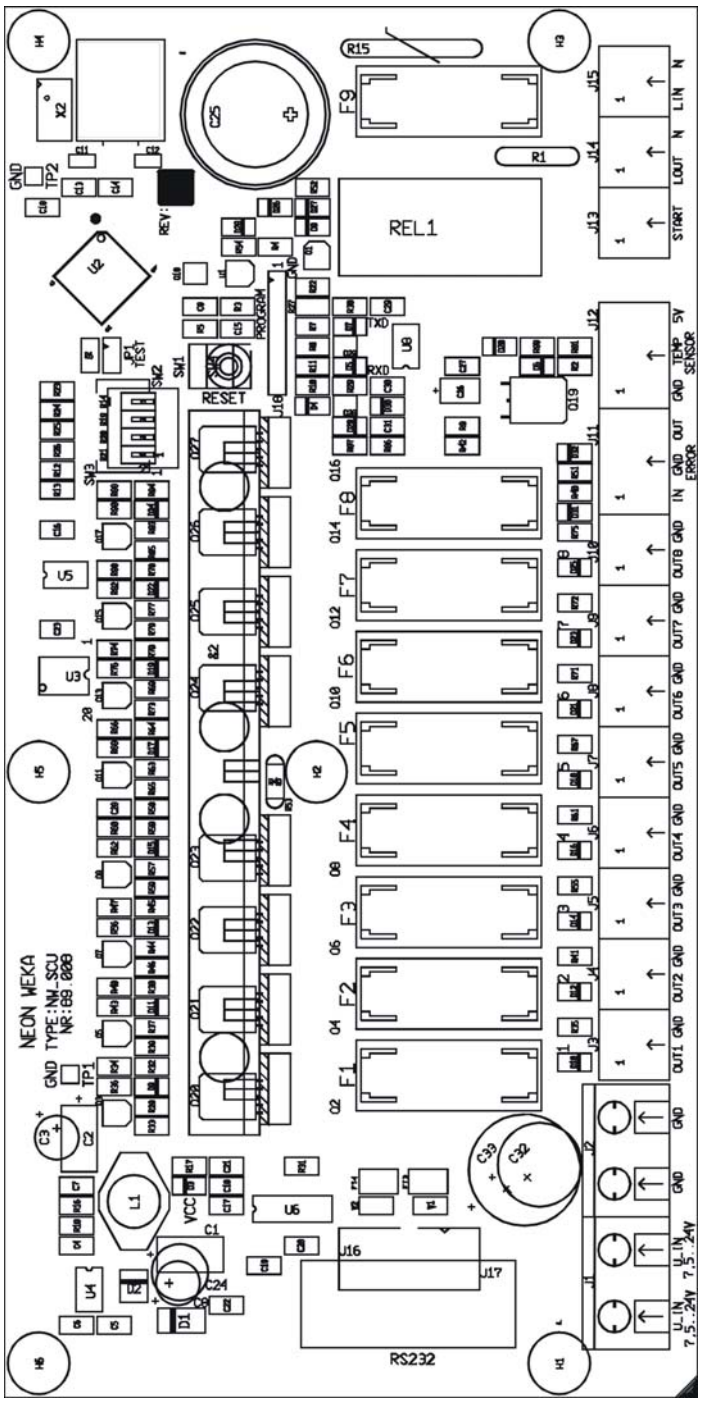
If the user prefers to make use of a potmeter instead of an external tension of 0-10 volts, please remove R1 and connect a potmeter of 1 to 10K LIN

If one wants to use the 0-10 volts input then D1 needs to be removed.
By varying the tension to the input now between 0 and 10 volts the setting will steer the controller.

See picture with transcript above.

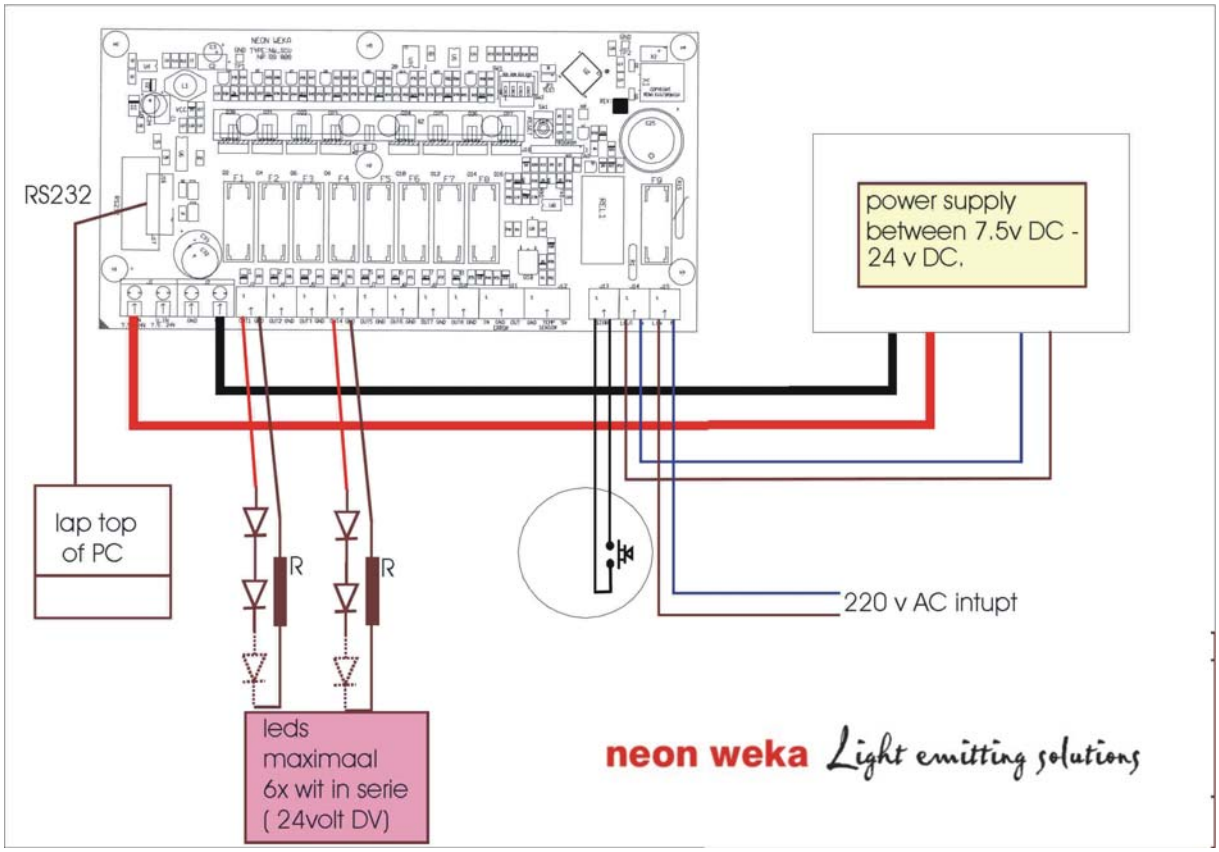
Connections :

Layout:



Connector	Function	PIN	Description
P1	service	test	automatic Calibration
J1	DC POWER	PIN 1 PIN 2	7,5V...24V DC 7,5V...24V DC
J2	DC POWER	PIN 1 PIN 2	GND (0V) GND (0V)
J3	OUTPUT 1	PIN 1 PIN 2	DC OUTPUT 1, ‘DC POWER’ Volt GND (0V)
J4	OUTPUT 2	PIN 1 PIN 2	DC OUTPUT 2, ‘DC POWER’ Volt GND (0V)
J5	OUTPUT 3	PIN 1 PIN 2	DC OUTPUT 3, ‘DC POWER’ Volt GND (0V)
J6	OUTPUT 4	PIN 1 PIN 2	DC OUTPUT 4, ‘DC POWER’ Volt GND (0V)
J7	OUTPUT 5	PIN 1 PIN 2	DC OUTPUT 5, ‘DC POWER’ Volt GND (0V)
J8	OUTPUT 6	PIN 1 PIN 2	DC OUTPUT 6, ‘DC POWER’ Volt GND (0V)
J9	OUTPUT 7	PIN 1 PIN 2	DC OUTPUT 7, ‘DC POWER’ Volt GND (0V)
J10	OUTPUT 8	PIN 1 PIN 2	DC OUTPUT 8, ‘DC POWER’ Volt GND (0V)
J11	ERROR I/O	PIN 1 PIN 2 PIN 3	INPUT, active = connected to PIN2 GND (0V) OUTPUT, Open Drain, FET switch to GND (0V)
J12	TEMP SENSOR	PIN 1 PIN 2 PIN 3	GND (0V) EXTERNAL TEMPRATURE SENSOR DC SUPPLY TEMPRATURE SENSOR (5V)
J13	START	PIN 1 PIN 2	230V (L), Switch to START unit, PIN2 230V (L1) , switch to START unit, PIN1
J14	AC POWER OUT	PIN 1 PIN 2	230V (L1) OUTPUT, to Power Supply 230V (N) OUTPUT, to Power Supply
J15	AC POWER IN	PIN 1 PIN 2	230V (L) INPUT 230V (N) INPUT
J16	RS232	PIN 2 and 3, connection to laptop or dim function tthrough pressure button	

Wiring Diagram:



external dimmer , can be connected to laptop /PC port